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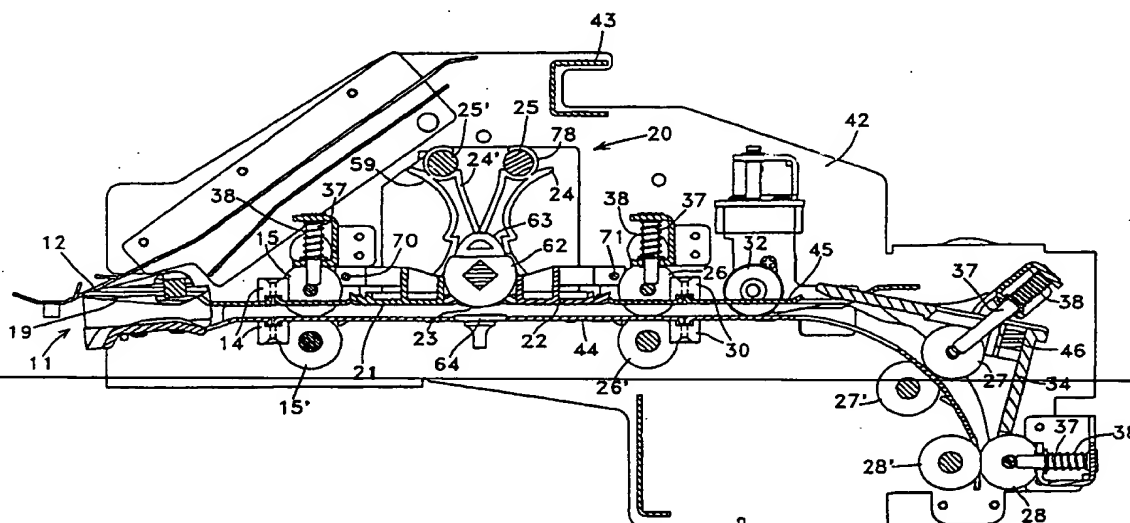
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(57) Abstract

The device (10) for processing a banking passbook (80) is mechanically and electrically connectable to a banking printer for implementing a page-turning function. This function responds to instructions received from the printer to skim through the passbook, passed to it by the printer and open at any page (82), to the page on which the data are to be printed, and return it to the printer. The device is also capable of effecting the functions of passbook length verification, of temporary passbook parking or capture, and verification that the line (86) of destination is free.

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TITLE

ADDITIONAL APPARATUS FOR PASSBOOK MANAGEMENT AND
OPERATING METHOD THEREOF

5

TEXT OF THE DESCRIPTION

Background of the invention - The device according to this invention
10 is intended for use in banks for automating and speeding up the passbook
processing operations, both in counter applications and also in "self-service"
applications.

Related technological art - Important usage is made of devices of the
type described above in countries where regulations applied in the banking
15 sector encourage the use of savings passbooks. This gives rise to the need to
frequently update the passbooks so as to have an up-to-date situation with a
printing of all the transactions conducted between two successive updatings of
the passbook. Consequently in those countries, banking passbooks (or savings
passbooks) have been adopted with characteristics that enable processing to be
20 automated: a magnetic stripe on the cover and a bar code identifying each
page.

The Fig. 5a is a schematic view of one such open banking passbook
80, comprising a cover 81, generally made of cardboard, enclosing within a
plurality of pages 82 (typically numbering 7-8, giving the open passbook a
25 maximum thickness of roughly 2-2.5 mm), the whole being held together by way
of a binding 83 down the spine of the closed passbook (Fig. 5b). Each page 82
bears in a defined position in its top left-hand corner, at a given distance from a
left edge 90, a bar code 85 indicating the number of the page in question (by
page is meant the entire surface area above and below the binding 83,
30 constituted by the sides of two sheets) according to a standard coding, known in
the sector art.

The information concerning transactions that has to be recorded on the
passbook 80 is printed on print lines 86 (typically numbering 24-28 for each

page 82), arranged parallel to the binding 83. Provided on the external side of the cover 81 is a stripe or band 84 of magnetic material containing in code form a series of items of information (e.g. name of the passbook holder, account number, page and line the last information was written on, etc.). The passbook 80 illustrated in Fig. 5a-b is introduced in the relative equipment in the direction of the arrow 87, thus presenting a front edge 88 and a rear edge 89.

Equipment is widely known and documented for automatically effecting the operations of reading/writing the magnetic stripe 84 and printing data concerning transactions on the inside pages 82. One example of this equipment is the Olivetti PR2 printer; however, this model requires that the passbook be introduced by the operator, after opening of the passbook at the right page for recording of the data concerning the last transactions carried out. Equally widely known is complex equipment not requiring this to be done, accepting introduction of the passbook opened at any page, and being provided with additional functionalities for positioning at the right page by skimming through the inside pages; this equipment is however expensive and requires complete replacement of equipment not having this functionality, but still in perfect working order and fit for use.

The problem is thus posed of disposing of a supplementary device, that can be connected to existing equipment for printing only, in order to implement the functionality of skimming through the passbook inside pages (and possibly also other secondary functionalities, such as for example "capture" of a counterfeit passbook), with resultant safeguarding of investments made while also significantly reducing the banking operator's workload.

Summary of the invention - The scope of this invention is that of defining a supplementary device for the processing of banking passbooks that can be connected to existing printing equipment to supplement the latter with the feature for automatic search for the right page for recording of the data concerning the last transactions carried out, receiving and returning the passbook along a defined path.

Another scope of the invention is that of defining a supplementary device for the processing of banking passbooks which, in addition to the feature

described above, also permits verification of the passbook dimensions, for example measurement of the length of the open passbook.

5 A further scope of the invention is that of defining a supplementary device for the processing of banking passbooks which, in addition to the features described above, also permits "capture" of a passbook with irregularities (for example, one that has been counterfeited), and also temporary "parking" of a completed passbook (namely, one that has no more room for recording the data concerning the last transactions) so that a new passbook, replacing the completed one, can be processed.

10 Yet another scope of the invention is that of defining a supplementary device for the processing of banking passbooks which, in addition to the features described above, also permits verification that the line destined for recording of the last data is effectively free of printing.

15 The above scopes and objects are obtained by means of a supplementary device for banking passbook processing, characterized as described in the main claim.

20 These and other scopes, characteristics and advantages of the invention shall become apparent in the course of the following description of a preferred embodiment, provided by way of non-exhaustive example, with reference to the attached drawings.

LIST OF FIGURES

- Fig. 1- Is a prospective view of the device as a whole.
- 25 Fig. 2- Is a simplified and partial plan view of the device.
- Fig. 3- Is a simplified and partial left-side view of the device according to a first transversal section, indicated III-III in Fig. 2.
- Fig. 4- Is a simplified and partial left-side view of the device according to a first transversal section, indicated IV-IV in Fig. 2.
- 30 Fig. 5a - Is a schematic view of a banking passbook, of a type suitable for processing by the device, in the open position.
- Fig. 5b - Is a schematic view of a banking passbook, of a type suitable for processing by the device, in the closed position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment will now be described with reference to the Figs. 1-4.

5 The device 10 comprises a structure 40 (Fig. 1), made for example of metallic sheet, substantially consisting of a front end 41 and a rear end 42, connected by two transverse sheets also acting as a lower guide 44 and an upper guide 45 (Fig. 3) for delimiting a path 60 of the banking passbook 80 (shown in Figs. 5a-b) inside the device 10, and also, according to a technique
10 well-known in the sector art, of suitable reinforcing cross-pieces perpendicular to the front 41 and rear 42 ends, one of which indicated by the numeral 43 is clearly visible, even though partially removed to grant a view of the mechanisms underneath, in Fig. 1.

 The path 60, which is bounded towards the rear end 42 by a lateral
15 guide 76 (Fig. 2), comprises an entrance zone or slot 11 (Fig. 4), a rectilinear zone 61 along which a series of operations for passbook 80 processing take place, and a parking zone 29. Included in the entrance zone 11 is a first switch 12 rotatable about a pin 18 for selectively assuming a work position, represented in Fig. 4, wherein a lower surface 19 is substantially aligned with
20 the upper guide 45 thus making the path 60 accessible to the passbook 80, or an idle position wherein it closes the path 60 and puts the slot 11 in communication with a space 13, which acts as an outlet space accommodating a sufficiently lengthy sheet, when the printer PR2 is printing the final lines of the sheet in question.

25 Rotation of the first switch 12 about the pin 8 is commanded by a motor 67, for example a known type stepping motor. A first position sensor 68 (depicted in Fig. 4 as a known type optoelectronic sensor) detects the work position of the first switch 12 from the position assumed by a lever (not shown in the figure) integral with the first switch 12 itself; a second position sensor not
30 shown in the figure, identical to the first sensor 68, detects the idle position of the first switch 12, again from the position assumed by the afore-mentioned lever.

Arranged along the path 60 are four pairs of feeding rollers: a first pair 15, 15' and a second pair 26, 26', driven in rotation selectively clockwise and counter-clockwise by a main motor 17, for example a known type stepping motor, through a linkage not depicted in the figures for simplicity's sake; and a
5 third pair 27, 27' and a fourth pair 28, 28' driven in rotation selectively clockwise and counter-clockwise by a parking motor 66, for example a known type stepping motor, through a linkage depicted only in part in the figures for simplicity's sake. All said four pairs of rollers are similar in structure, accordingly for simplicity's sake only one will be described in detail (the fourth pair 28, 28'),
10 with reference to Figs. 1, 3 and 4; the fourth pair 28, 28' comprises a driving roller 28', the axis of which is rotatably affixed to the front 41 and rear 42 ends through, for example, a sleeve not shown in the figures, which receives the motion from a gear wheel 56 (which in turn receives motion through a linkage mechanism not shown in detail in the figures for simplicity's sake from the
15 parking motor 66) and a counter-rotating roller 28 comprising a shaft 35, affixed to a gear 57 meshing with the gear wheel 56, and a series of rubber rollers 36 (three in Fig. 1) affixed to the shaft 35. The shaft 35 is free to slide in slot 47 made symmetrically in the front 41 and rear 42 ends depending on thickness of the passbook 80 placed between the rollers 36 and the roller 28'. A series of
20 presser members (two in Fig. 1), comprising a pin 37 and a helical spring 38, act on the shaft 35 in a direction perpendicular to the driving roller 28' establishing a load between the rollers 36 and the driving roller 28'. Resilience of the helical spring 38 is so defined that the said load is substantially constant, provided that thickness of the interposed passbook 80 remains inside defined limits.

25 Again arranged along the path 60, between the switch 12 and the first pair of rollers 15, 15' is a third position sensor 14 (Fig. 3), in a substantially central position with respect to the two front 41 and rear 42 ends, shown as a known type, optoelectronic interrupting sensor; additionally, disposed in an intermediate position between the second pair of rollers 15, 15' and the third pair
30 of rollers 26, 26', is a page-turning device 20.

The latter comprises a pair of lifting rollers 23 keyed on to a common, square section shaft 75 (put selectively in rotation clockwise or counter-clockwise by a lifter motor 50, depicted in the figure as a known type stepping

motor), a left flap 21 and a right flap 22 symmetrically arranged upstream and downstream of the pair of rollers 23 and rotating about respective pins 70 and 71, and a series of pivotable curved guides 24, 24' arranged alternately partly in a first position and rotatable about a shaft 25 (the ones indicated with the numeral 24), and partly (the ones indicated with the numeral 24') in a second position the mirror image of the first position and rotatable about a shaft 25' (in Fig. 1 there are four pivotable curved guides 24, 24', two of which 24 disposed with one side 59 having a curved profile oriented towards the right flap 22 and rotatable about the shaft 25, and the other two 24', between the previous ones, disposed with the side 59 having the curved profile oriented towards the left flap 21 and rotatable about the shaft 25').

The pivotable curved guides 24, 24' also comprise a first eyelet-shaped termination 78 for rotatingly hooking on to the shaft 25 or the shaft 25' and a second fork-shaped termination, opposite the first termination 78, comprising a first appendage 72, the continuation of the side 59 wherefrom an end portion has been removed, and a second appendage 73. Under the action of their own weight, the pivotable curved guides 24, 24', being free to rotate about the respective shafts 25, 25', assume a position wherein the second appendage 73 is in abutment with a circular recess made in the square shaft 75, and the first appendage 72 is on top of the corresponding left 21 or right 22 flap (Fig. 4), impelling the latter to the horizontal position so as constitute a guide for the passbook 80 perfectly aligned with the upper guide 45.

The pair of lifting rollers 23 each comprises a support cam 62 having a substantially D-shape and a lifting element 63, also having a substantially D-shape and made of a material having a high coefficient of friction with respect to the page 82 of the passbook 80. The support cam 62 and the lifting element 63 are joined together along the rectilinear side of the D, so as to assume as a whole an oval-shape section. Furthermore each support cam 62 is provided, eccentrically with respect to the square shaft 75, with a front pin 73 on a front face and a rear pin 77 on a rear face, the function of which shall be illustrated in the following, which protrude from the corresponding face of the support cam 62 by an amount less than the amount removed from the first appendage 72, so as never to interfere with the latter.

In correspondence with the lifting rollers 23, affixed to the lower guide 44 is a pair of slides 64 made of a material having a high coefficient of friction with respect to the cover 81 of the passbook 80. In the idle position (Fig. 4), the lifting element 63 is facing upwards and there is no contact between the lifting rollers 23 and the slides 64. During operation, the lifting rollers 23 effect a complete turn, selectively clockwise and counter-clockwise, always coming to a stop in the idle position. A fourth position sensor 48 (depicted in Fig. 1 as a known type, optoelectronic sensor) detects the correct idle position of the lifting rollers 23 by a cam 65 keyed on the square shaft 75.

Also arranged along the path 60, in an intermediate position between the third pair of rollers 26, 26' and the fourth pair of rollers 27, 27', are a fifth position sensor 30 in a substantially central position with respect to the two front 41 and rear 42 ends, and an optical reader 31 (shown in Fig. 1 as a known type CCD reader) in an asymmetrical position, closer to the rear end 42 and hence to the lateral guide 76, for reading of the bar code 85 found on each page 82 of the passbook 80 (Fig. 5a). The distance between the fifth sensor 30 and the third sensor 14 is less than the minimum acceptable length L (Fig. 5a) of the passbook 80, for instance it could be of length $L = 136$ mm, whereas the minimum length L is typically 165 mm.

Rotatingly affixed to the optical reader 31 is a spacing wheel 32, intended to ensure that the correct distance is maintained between the page 82 of the passbook 80 and the optical reader 31, and to flatten the surface of the page 82, where necessary, during optical reading, in order to guarantee correct reading of the bar code 85.

At the end of the rectilinear zone 61 of the passage 60, where the parking zone 29 starts, a second switch 34 is disposed, rotatable with respect to a pin 46, having an approximately L-shape section, capable of selectively assuming a working position, shown in Fig. 4 wherein a lower surface 49 thereof is substantially aligned with the upper guide 45, thereby setting the rectilinear zone 61 of the passage 60 in communication with the parking zone 29, or an idle position wherein it shuts off this communication and disposes an upper surface 58 in line with a series of conveying ribs 16, the function of which will be described in the following.

The second switch 34 selectively assumes the working position or the idle position by way of a pivoting motion about the pin 46, motion commanded (through a linkage not depicted in detail in the figure for simplicity's sake) by a second motor 51, also a known type stepping motor in the example illustrated.

5 A sixth position sensor 33 (depicted in Fig. 4 as a known type optoelectronic sensor) detects the working position of the second switch 34 from the position assumed by a lever (not shown in the figure) integral with the said second switch 34; a seventh position sensor not shown in the figure, identical to the sixth sensor 33, detects the idle position of the second switch 34 again from
10 the position assumed by the said lever.

Operation will now be described of the supplementary device 10 for processing of a banking passbook 80 according to the invention; in the description that follows, it is understood that the device 10 is mechanically and
15 electrically connected to a desk-top printer, for example the Olivetti PR2 model specifically for the banking sector, that it comprises a magnetic reader for the magnetic stripe on the passbook cover, an impact dot-matrix printer, and possibly also an MICR reader and/or an OCR character reader, and that it is widely known.

20 The desk-top printer also comprises a mouth (or entrance slot) into which an operator, or the holder of the passbook in the case of a "self-service" type utilisation, inserts the open banking passbook 80 by placing the left edge 90 thereof against a lateral ream-former. The mechanical connection is made, for instance, by using a special support platform that guarantees perfect
25 alignment of the lateral ream-former of the desk-top printer and the lateral guide 76 delimiting the path 60 inside the device 10.

The desk-top printer also comprises a power supply and a known type electronic controller. The electrical connection is made, for instance, through a connector that provides the device 10 with both the serial interface for the
30 exchange of information and commands and also the electrical power supply.

The device 10 is substantially suitable for effecting the following functions:

- a) turning the pages of the passbook, one at a time, forwards or backwards,
 - b) determining length of the open passbook (in the direction of the arrow 87 in Fig. 5a),
 - 5 c) "parking" a passbook temporarily to permit processing of a second passbook,
 - d) "capturing" a passbook,
- that shall be illustrated in detail in the following.

10 a) Page-turning function.

The banking passbook 80 is received by the device 10 when the switch 12 is in the working position, ascertained by the first position sensor 68, and taken into charge by the first pair of rollers 15, 15' and then also by the second pair of rollers 26, 26', distance whereof from the first pair of rollers 15, 15' is less
15 than the minimum length of the open passbook that the device has to process, and fed until the bars of code 85 (see Fig. 5a) are in correspondence with the optical reader 31, which is thus able to read the number of the page. This information is sent through the serial interface to the PR2 and compared with information written on the magnetic stripe and concerning the page upon which
20 the newly recorded data have to be written.

If the current page and the page the new recording is to be made on do not match, the PR2 commands execution of a page-turning cycle, by a determined number of pages forwards or backwards; to effect the page-turning cycle, the main motor 17 sets the second pair of rollers 26, 26' and the first pair
25 of rollers 15, 15' in motion so that they carry the passbook 80 along the path 60, selectively in the direction opposite the slot 11 or in the direction of the slot 11,
until it is:

- 1) with the rear edge 89 in a defined position (for example, at a distance of 20 mm) upstream of the point of tangency between the slide 64 and the page-
30 turning rollers 23, so that the passbook 80 is gripped between the second pair of rollers 26, 26', if the pages have to be turned forwards,
- 2) with the front edge 88 in a defined position (for example, at a distance of 20 mm) downstream of the point of tangency between the slide 64 and the

page-turning rollers 23, so that the passbook 80 is gripped between the first pair of rollers 15, 15', if the pages have to be turned backwards.

In the situation 1), the lifting roller 23 is made effect one full turn counter-clockwise thereby producing two actions: first and foremost the rear pin 5 77 engages the second fork-shape termination of the pivotable curved guides 24 in correspondence with the second appendage 73 and, with the rotation continuing, in turn determines clockwise rotation of the guide 24 about the shaft 25, thereby disengaging the first appendage 72 from the right flap 22 which is left free to rotate about the pin 71; secondly, the lifting element 63, after rotation 10 of approximately half a turn by the lifting roller 23, comes into contact with the page 82 and urges it towards the binding 83, making the said page 82 bend upwards, accordingly lifting the right flap 22 against its own weight and making it rotate about the pin 71. With the lifting roller 23 continuing its rotation, the rear edge 89 of the page 82 rises by a sufficient amount as to engage the pivotable 15 curved guides 24 sliding along the profile 59. When the lifting roller 23 has completed a full turn, the passbook 80 is fed along the path 60 in the direction of the slot 11 to a point beyond where its rear edge 89 engages the third sensor 14, and in this movement the left flap 21, impelled in the horizontal position by the first appendage 72 of the pivotable curved guides 24', completes the 20 operation of turning forwards the page 82, started by the lifting roller 23.

In the situation 2), the lifting roller 23 is made effect one full turn clockwise thereby producing two actions: first and foremost the front pin 74 engages the second fork-shape termination of the pivotable curved guides 24' in 25 correspondence with the second appendage 73 and, with the rotation continuing, in turn determines counter-clockwise rotation of the guide 24' about the shaft 25', thereby disengaging the first appendage 72 from the left flap 21 which is left free to rotate about the pin 70; secondly, the lifting element 63, after rotation of approximately half a turn by the lifting roller 23, comes into contact with the page 82 and urges it towards the binding 83, making the said page 82 30 bend upwards, accordingly lifting the left flap 21 against its own weight and making it rotate about the pin 70. With the lifting roller 23 continuing its rotation, the front edge 88 of the page 82 rises by a sufficient amount as to engage the pivotable curved guides 24' sliding along the profile 59. When the lifting roller 23

has completed a full turn, the passbook 80 is fed along the path 60 in the direction of the reader 31 to a point beyond where its front edge 88 engages the fifth sensor 30, and in this movement the right flap 22, impelled in the horizontal position by the first appendage 72 of the pivotable curved guides 24, completes the operation of turning backwards the page 82, started by the lifting roller 23.

Upon completion of each page 82 turning operation, whether forwards or backwards, the passbook 80 is brought back into the position where the bars of code 85 are in correspondence with the optical reader 31, so that reading can be effected of the page number, in order to verify if the operation just completed has been carried out correctly or if an error has occurred (for example, failed skimming or double skimming); in the event of an irregularity, the PR2 suitably commands a new page-turning cycle to remedy the error. If a bar code missing condition is detected, the device 10 can be programmed automatically skim and read the next or the previous page; conversely, if the bar code is found present, but is not recognized as one of those expected, the device 10 sends the PR2 an error signal.

b) Open passbook dimension measuring function.

The length L (Fig. 5a) of the open passbook is generally between 165 and 180 mm, or more frequently between 170 and 174 mm, with a tolerance of 1 mm. To measure the length L, the third sensor 14 and the fifth sensor 30 are used, remembering that the distance therebetween is defined (136 mm in the example shown); the front edge 88 of the passbook 80 received by the PR2 is initially detected by the third sensor 14 and then by the fifth sensor 30: from this point, the n steps effected by the main motor 17 are counted while the passbook 80 moves towards the optical reader 31 until when the third sensor 14 detects presence of the rear edge 89. As the number of mm of feed of the passbook 80 corresponding to one step of the main motor 17 is known from the characteristics of the main motor 17 and of the elements transmitting motion from the main motor 17 to the pairs of rollers 15, 15' and 26, 26', length $L = (136 + k n)$ mm can be determined immediately, where k is feeding (expressed in millimetres) of the passbook 80 along the path 60 resulting from a rotation of one step of the main motor 17.

If the length L of the passbook 80 determined accordingly does not match the length stored as the reference value or provided by the PR2 to the device 10 together with the other characteristics of the passbook 80 to be processed, the device 10 sends the PR2 an error signal.

5

c) Passbook temporary "parking" function.

This function permits temporary withholding of a passbook that has been completely printed and cannot be updated to the last transaction, requesting the operator to insert a new passbook; the completed passbook is
10 "parked" in order not to interfere with full processing of the new passbook, with the exception of the capture and "parking" functions. The completed passbook is returned to the operator, through the PR2, only upon completion of processing of the new passbook, to avoid the risk of failed insertion and updating of the new passbook.

15

The passbook 80 recognized as finished, is fed by the first pair of rollers 15, 15' and by the second pair of rollers 26, 26' along the path 60 first engaging, in this order, the fifth sensor 30 and the optical reader 31, and subsequently disengaging the said items in the same order; the second switch 34 is placed in the working position, with the lower surface 49 thereof aligned with the upper
20 guide 45, and where correct position is detected by means of the sixth sensor 33. Accordingly the front edge 88 of the passbook 80 is taken into charge, in this order, by the third pair of rollers 27, 27' and the fourth pair of rollers 28, 28', which continue to feed the passbook 80 until when the optical reader 31 no longer detects presence of the rear edge 89; at this point, the second switch is
25 put in the idle position and correct position is detected by the seventh sensor. The parking motor 66 and as a result the third pair of rollers 27, 27' and the fourth pair of rollers 28, 28' stop, and the passbook 80 is withheld in the "parking" zone 29 of the path 60, awaiting to be sent back to the PR2.

30

d) Passbook "capture" function.

This function, of use when the device 10 is used in "self-service" applications without operator assistance, permits withholding indeterminately of

a passbook which, as resulting from a check effected by the PR2, for example, is count rfeited or has been fraudulently subtracted from its legitimate owner. This function involves the execution of all the operations described in the previous case c), the sole difference being that the third pair of rollers 27, 27' and the fourth pair of rollers 28, 28' continue to feed the passbook 80 even after the rear edge 89 has disengaged the optical reader 31, for a determined and sufficient amount of time to allow feeding of the rear edge 89 beyond the grip of the fourth pair of rollers 28, 28', so that the passbook 80 falls through gravity into a collection basket underneath (not depicted), from where it may be extracted only by an authorized operator.

A second embodiment of the device 10 will now be illustrated, wherein the optical reader 31, in addition to reading the bar code 85 identifying the number of the page 82, is also used to perform a function verifying if data has already been printed on a line or identifying the last printed line of a page, so as to avoid incorrect information on the magnetic stripe 84 of the passbook 80 (or absence of the stripe) resulting in an already printed line being overwritten. In this second embodiment of the device 10, the optical reader 31 is capable of detecting the presence of at least one character printed in black ink in an area of defined width (for example, approximately 14 mm), starting at a determined distance (for example, approximately 7.5 mm) from the left edge 90 of the passbook 80.

After effecting the page-turning operations in order to reach the right page, the device 10 commands feeding of the passbook 80 along the path 60 until the zone of the right page whereupon the line 86 is to be printed is positioned in correspondence with the optical reader 31, to effect verification of whether data has already been printed thereupon.

If the line 86 is free, the passbook 80 is duly returned to the PR2 for printing to be performed; if the line 86 is not free, the passbook 80 is fed further until the first free line 86 is identified. During this feeding, the second switch 34 is in the idle position, with an upper surface 58 aligned with the conveying ribs 16, so that during the search for the free line, the passbook 80 has a suitable space granting it freedom of movement. The information concerning the first free

line 86 is provided through the electric interface to the PR2 for updating of the indication of the line from which to start printing the new data, and the passbook 80 is then returned to the PR2.

5 Naturally changes may be made to the invention described above, without exiting from the scope of the invention.

 For example, it is possible to use direct current motors in place of the stepping motors; or photoelectric sensors may be used that are indirectly actuated by the passbook 80 through the interposition of a lever commanded
10 thereby.

 Or a page-turning device 20 other than the one described may be implemented, based for instance on the use of a page-turning roller disposed obliquely along the path 60 and cooperating with a guide also disposed obliquely, according to a technique known in the sector art.

15 Or again, the optical reader for effecting the function of verification of whether data have already been printed on a line or identification of the last printed line of a page may be provided in addition to the optical reader for reading of the page number bar code.

 In short, without prejudice to the principle of the present invention, the
20 construction details and forms of actuation may be amply varied with respect to what has been described and illustrated, without exiting from the scope of the invention.

CLAIMS

1. A supplementary device for processing of a banking passbook (80) comprised by a cover (81) and a plurality of inside pages (82) joined along a binding (83), said device being selectively connectable to a printing equipment
5 for printing data along a print line (86), and comprising:
- communicating means (11) for putting said device in communication with said printing equipment;
 - transporting means (15, 15', 26, 26', 27, 27' 28, 28') for transferring on a first defined path (60) said passbook (80) from said printing equipment to said
10 device according to a first direction, and from said device to said printing equipment according to a second direction opposite to said first direction;
 - page-turning means (20) for turning a specific page with respect to another page of said plurality of inside pages (82);
 - position sensing means (14, 30) for detecting a position of said
15 passbook (80) along said first defined path (60);
 - optical reading means (31) for reading a pre-printed bar code (85) on said plurality of pages (82),
- characterized in that it further comprises switching means (34) for intercepting said passbook (80) along said first defined path (60) and deflecting it along a
20 second defined path (29), and parking means (27, 27', 28, 28') for temporarily withholding said passbook (80) switched along said second defined path.
2. A device according to the claim 1, characterized in that it further comprises second optical reading means (31) for detecting the presence of printed data on said print line (86).
- 25 3. A device according to the claim 1, characterized in that it further comprises capturing means (27, 27', 28, 28') for withholding for an indefinite time said passbook (80) switched along said second defined path (29).
4. A device according to the claim 1, wherein said printing equipment comprises an entrance slot for said passbook (80) having a lateral ream-former,
30 characterized in that it further comprises lateral guiding means (76) for aligning said passbook (80) with said lateral ream-former.
5. A device according to the claim 1, characterized in that said second defined path (29) is completely distinct from said first defined path (60), so that

said device performs processing of a new banking passbook while said passbook (80) switched along said second defined path (29) is withheld by said parking means (27, 27', 28, 28').

5 6. A device according to the claim 5, characterized in that said processing of said new banking passbook comprises transfer of data from said passbook (80) switched along said second defined path (29) to said new banking passbook.

10 7. A device according to the claim 5, characterized in that said passbook (80) switched along said second defined (29) path is withheld by said parking means (27, 27', 28, 28') until when said processing of said new banking passbook is completed, and said new passbook is transferred from said device to said printing equipment according to said second direction.

15 8. A device according to any one of the preceding claims, characterized in that said page-turning means (20) comprise a lifting roller (23), a right flap (22) and a left flap (21) rotatable about respective pins, and a plurality of guides (24, 24') having one side with a curved profile (59).

9. A device according to any one of the preceding claims, characterized in that said optical reading means (31) comprise a CCD sensor.

20 10. A device according to any one of the preceding claims, characterized in that said position sensing means (14, 30) comprise an optoelectronic switch.

11. A device according to any one of the preceding claims, characterized in that said switching means (34) comprise a blade rotatable about a pin (46), activated by a first motor (51) between an idle position and a working position.

25 12. A device according to any one of the preceding claims, characterized in that said communicating means (11) comprise a switch (12) rotatable about a pin (18), activated by a second motor (67) between an idle position and a working position.

30 13. A device according to the claim 11 or 12, characterized in that said idle position and said working position are detected by an optoelectronic sensor (68).

14. A device according to the claim 11 or 12, characterized in that said first motor (51) and said second motor (67) are stepping type.

15. A device according to any one of the preceding claims, wherein said device also includes a structure (40) comprising a front end (41) and a rear end (42), characterized in that said transporting means (15, 15', 26, 26', 27, 27' 28, 28') comprise a driving roller (15, 26, 27, 28) and a presser roller (15', 26', 27',
5 28'), said driving roller being rotatably affixed to said front end and to said rear end, and said presser roller being suitable for sliding in a slot (47) made in said front end (41) and in said rear end (42).

16. A method for processing of a banking passbook (80) constituted by a cover (81) and a plurality of inside pages (82) joined along a binding (83),
10 characterized in that it comprises the following steps:

- providing a printing equipment for printing data along a print line (86) of said banking passbook,
- providing a supplementary device (10) selectively connectable to said printing equipment, said supplementary device including:
 - 15 - communicating means (11) for putting said device in communication with said printing equipment;
 - transporting means (15, 15', 26, 26', 27, 27' 28, 28') for transferring on a first defined path (60) said passbook (80) from said printing equipment to said device (10) according to a first direction, and from said device
20 to said printing equipment according to a second direction opposite to said first direction;
 - page-turning means (20) for turning a specific page with respect to another page of said plurality of inside pages (82);
 - position sensing means (14, 30) for detecting said passbook (80)
25 along said first defined path (60);
 - optical reading means (31) for reading a pre-printed bar code (85)
on said plurality of pages (82);
 - switching means (34) for intercepting said passbook (80) and deflecting it along a second defined path (29); and
 - 30 - parking means (27, 27', 28, 28') for temporarily withholding said passbook (80) switched along said second defined path (29),
 - electrically and mechanically connecting said printing equipment to said supplementary device (10).

17. A method according to the claim 16, characterized in that it further comprises the step of determining a dimension of said banking passbook (80).

18. A method according to the claim 16, wherein said supplementary device also includes second optical reading means, characterized in that it comprises
5 the step of detecting the presence of printed data on said print line through said second optical reading means .

19. A method according to the claim 16, wherein said supplementary device also includes capturing means (27, 27', 28, 28') for capturing said passbook (80) switched along said second defined path (29), characterized in that it further
10 comprises the step of withholding for an indefinite time said passbook captured by said capturing means.

20. A method according to the claim 16, wherein said printing equipment comprises an entrance slot for said passbook (80) having a lateral ream-former, and said supplementary device also includes lateral guiding means (76) for
15 guiding said passbook, characterized in that it further comprises the step of aligning said lateral guiding means with said lateral ream-former.

21. A method according to the claim 16, wherein said second defined path (29) of said device is completely distinct from said first defined path (60), characterized in that it further comprises the step of performing processing of a
20 new banking passbook while said passbook (80) switched along said second defined path (29) is withheld by said parking means (27, 27', 28, 28').

22. A method according to the claim 21, characterized in that said step of performing said processing of said new banking passbook comprises the transfer of data from said passbook (80) switched along said second defined
25 path (29) to said new banking passbook.

23. A method according to the claim 21, characterized in that said step of performing said processing of said new banking passbook comprises said withholding by said parking means (27, 27', 28, 28') of said passbook (80) switched along said second defined path (29) until when said processing of said
30 new banking passbook is completed, and said new passbook is transferred from said device (10) to said printing equipment according to said second direction.

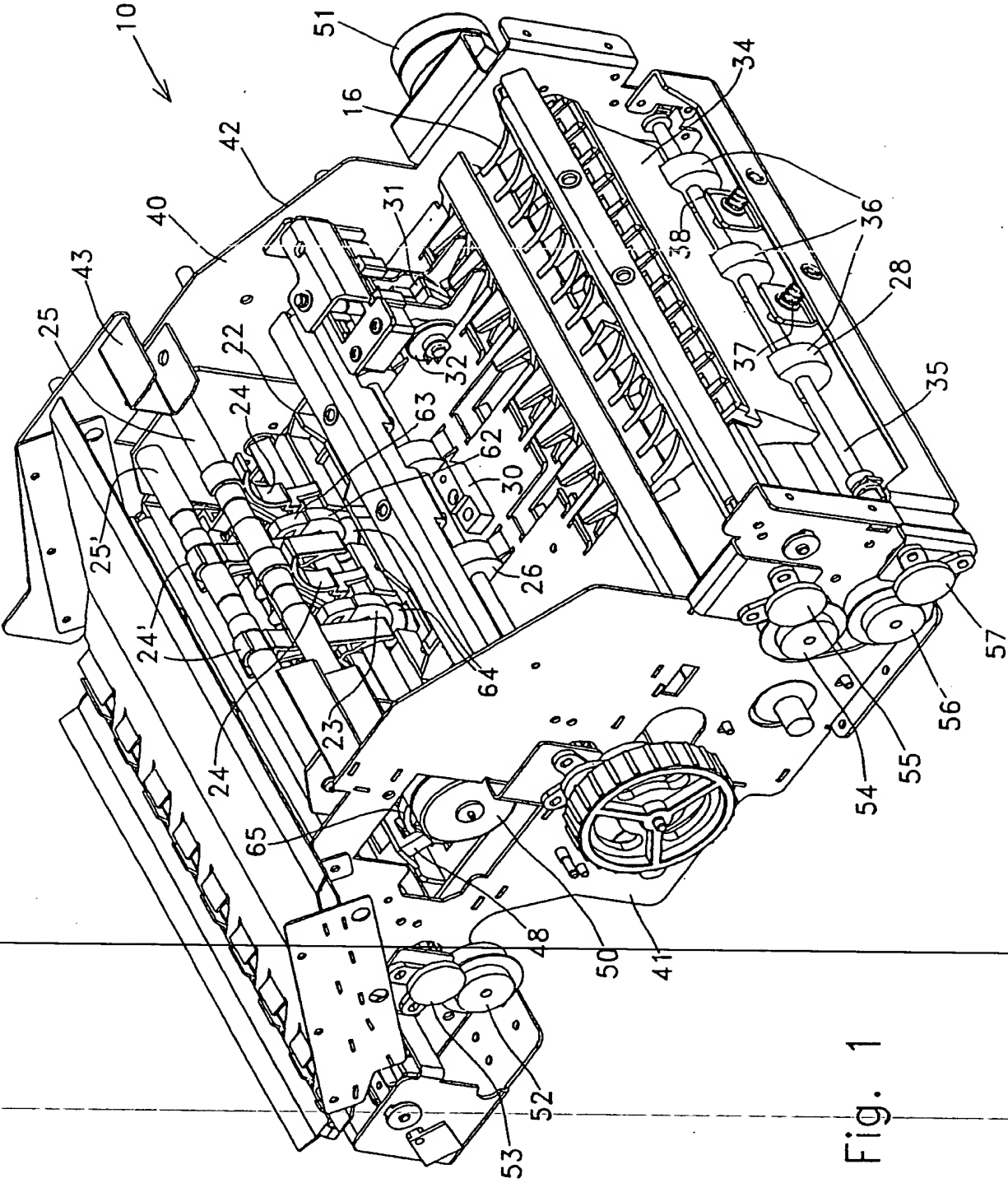
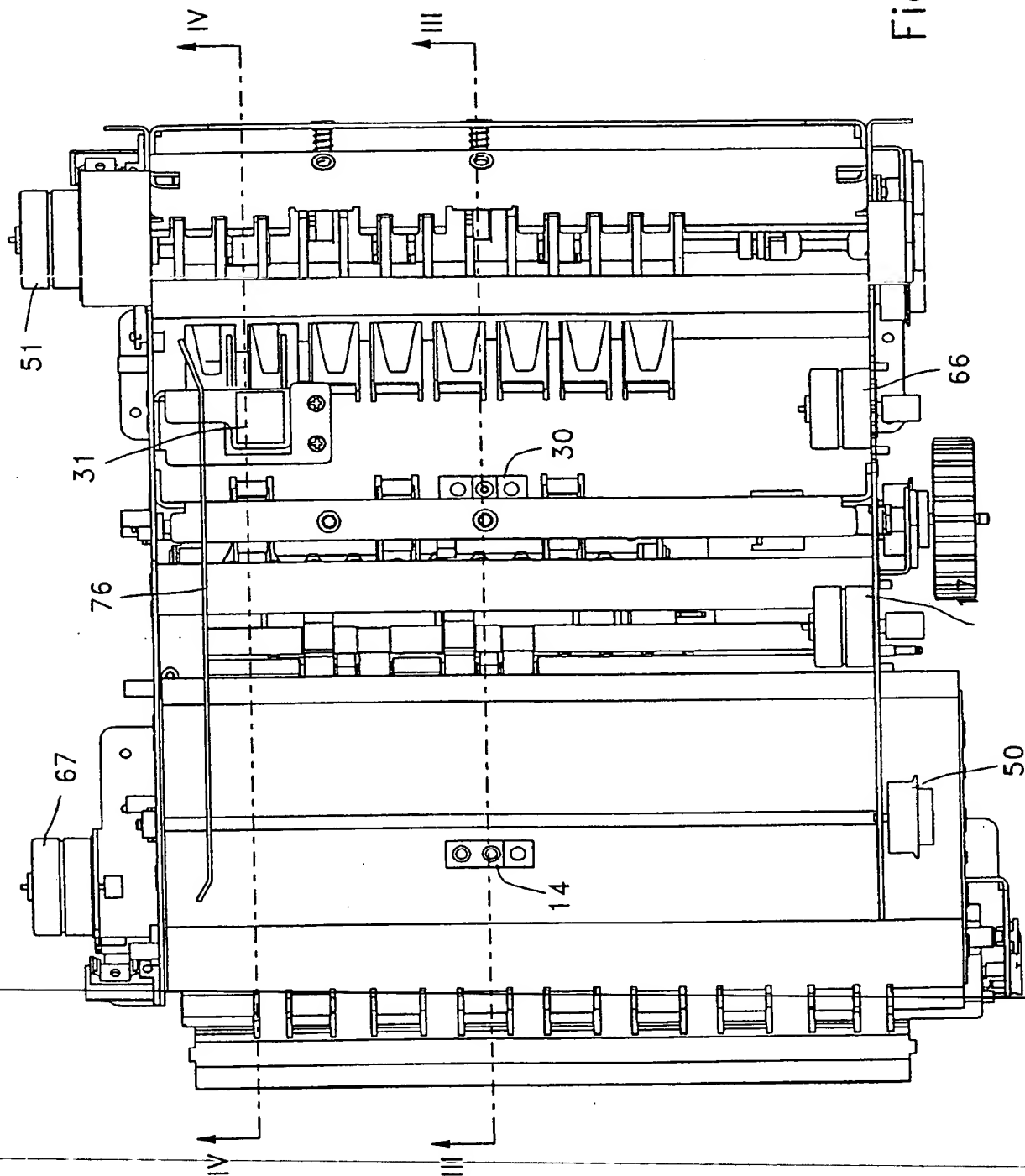


Fig. 1

Fig. 2



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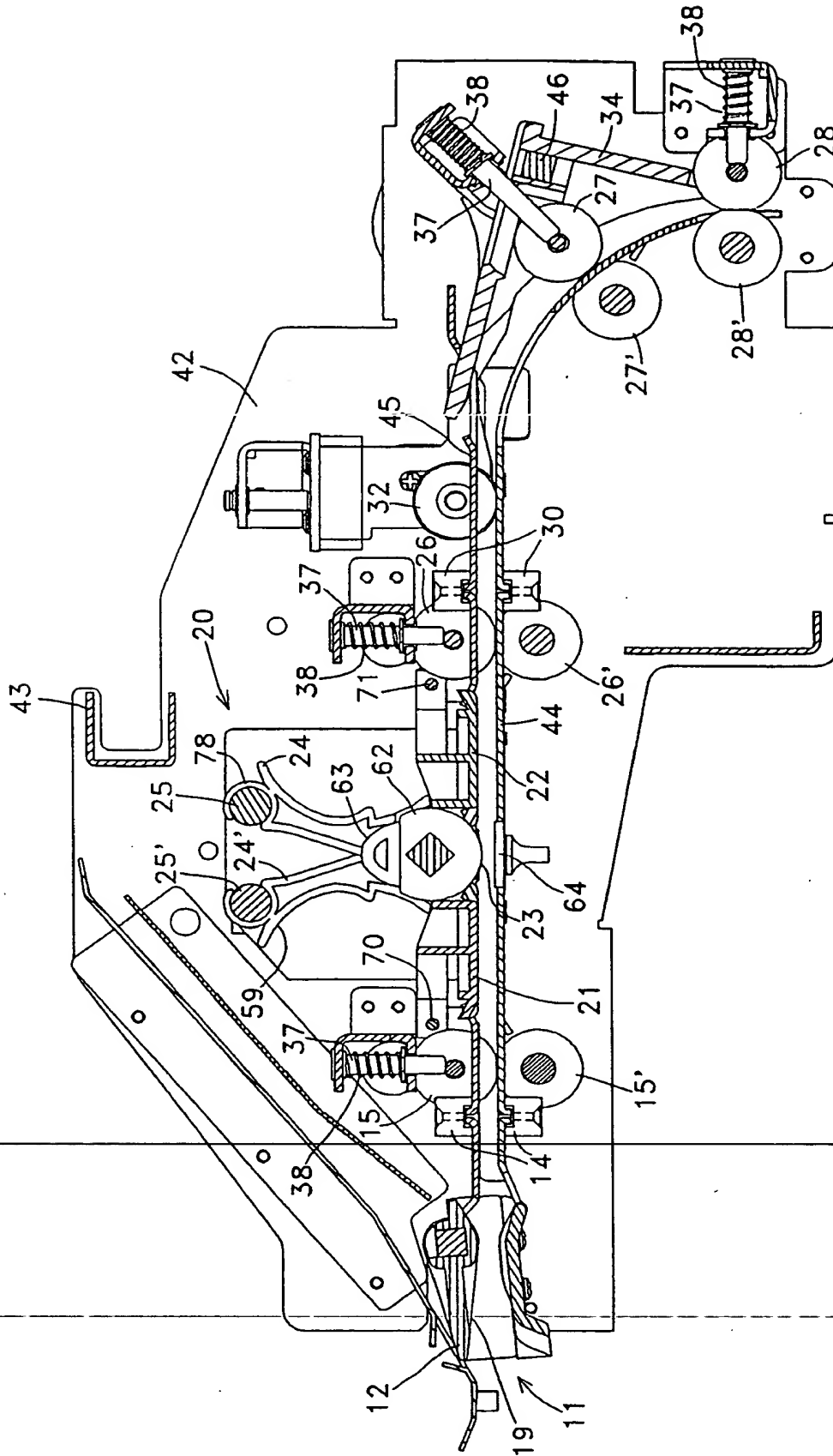
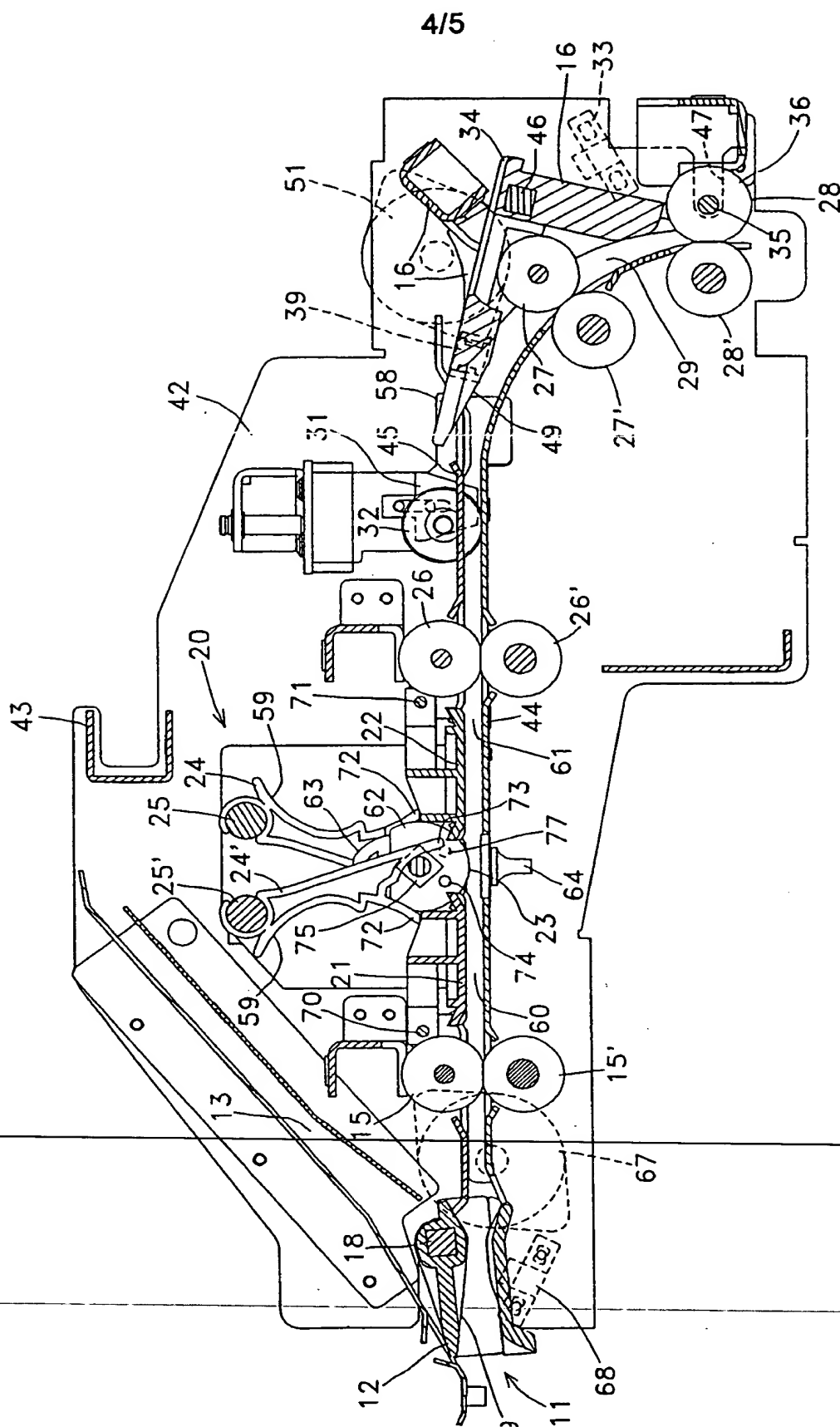


Fig. 3



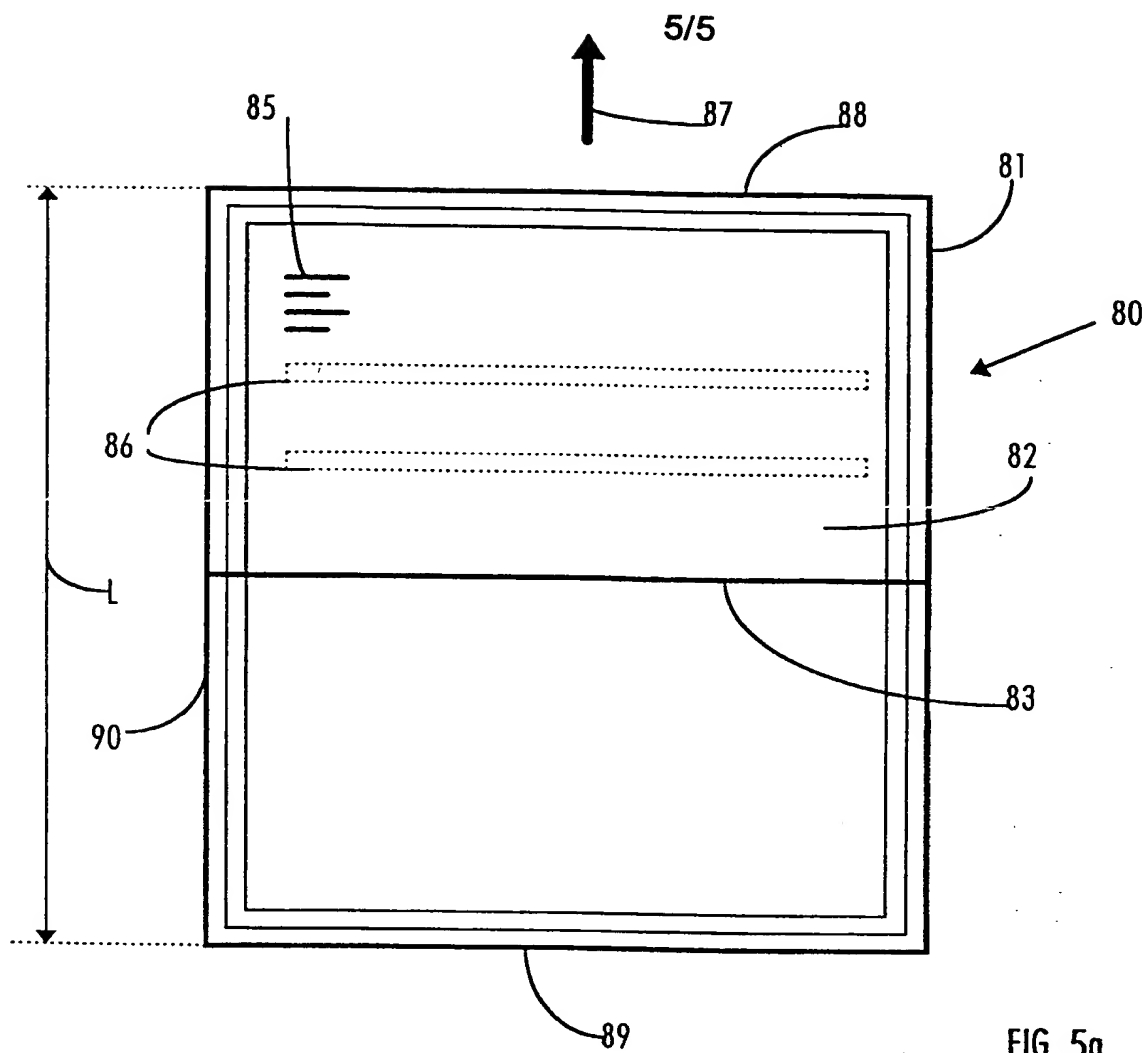


FIG. 5a



FIG. 5b

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 98/00001

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G07F7/10 B42D9/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G07F B42D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 017 026 A (TAKESAKO ET AL.) 21 May 1991	1-7, 11, 12, 16, 18-23
Y	see column 5, line 56 - column 6, line 39	8-10, 14, 17
A	see column 8, line 29 - line 66; figure 3 ---	9, 13, 15
Y	US 4 280 036 A (FUKATSU) 21 July 1981	8, 10, 14
A	see column 7, line 13 - column 8, line 11 see column 13, line 14 - column 16, line 59; figures 6-9, 13-19 ---	1, 2, 4
Y	US 5 493 943 A (HORIKAWA) 27 February 1996 see abstract ---	9
Y	EP 0 414 604 A (FUJITSU) 27 February 1991 see column 1, line 47 - column 2, line 3; figure 1 ---	17
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

3 June 1998

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	----- PATENT ABSTRACTS OF JAPAN vol. 7, no. 42 (P-177) '1187! , 19 February 1983 & JP 57 193864 A (TOKYO SHIBAURA), 29 November 1982, see abstract	
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